EXHIBIT 124

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Edition #3 is available here

Header Bidding Observatory #1

PSI Global Competitive Intelligence
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What is Header Bidding?

- Header bidding is an **ad mediation technique** where publishers place HTML or JavaScript code in the header of their site to run a **real time pre-assessment** of the value of their inventory before the content of the page loads, and often **before** a publisher's **primary ad server is called**

- This technique goes by various names: **pre-bidding**, **RTA**, **RTP** and more variants used by different providers

- Header bidding **does not replace the ad server**: the creative is served in the usual way through the ad server, using server **line items** and server **tags** on the page

- The change is that the header bidder **targeted line item** is selected by **DFP** if the header bidder replies with a **'yes'** to an impression

- Publishers use it if they want to work with multiple exchanges and check **real time prices** across those exchanges

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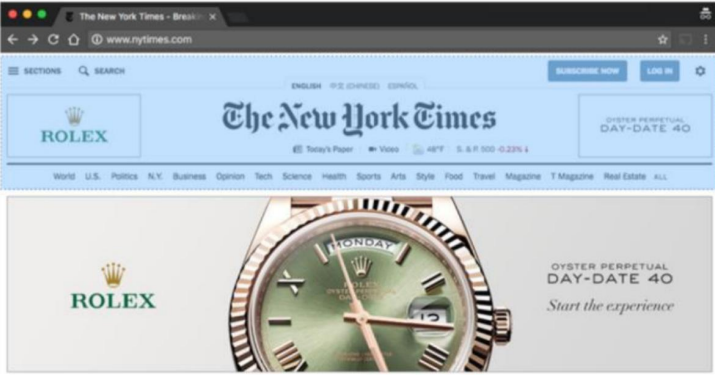
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To enable header bidding, publishers place lines of JavaScript known as header tags in the header section of their webpage for each SSP they wish to include.
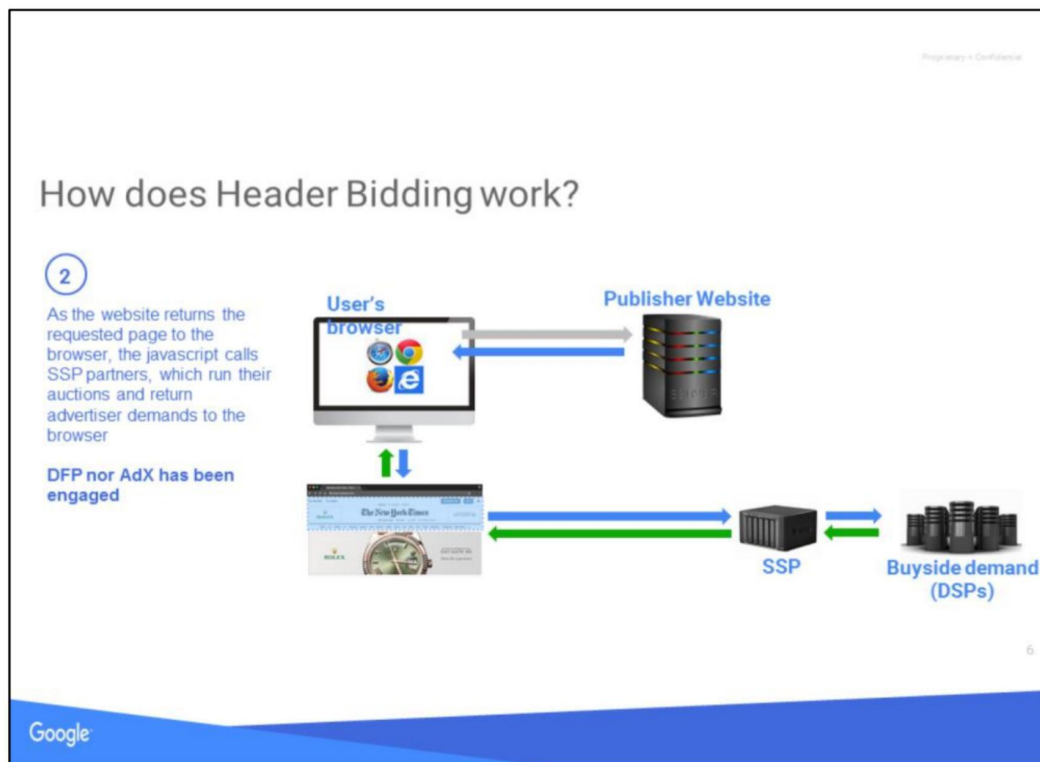
- When a user visits the webpage, the JavaScript fires before the browser even notifies the ad server, calling the SSP vendors and allowing their auctions to take place on that impression.
- This means even guaranteed line items haven't seen it yet.
- Enables the true value of that impression to be realised in the open market, rather than offered once direct sales have been satisfied.
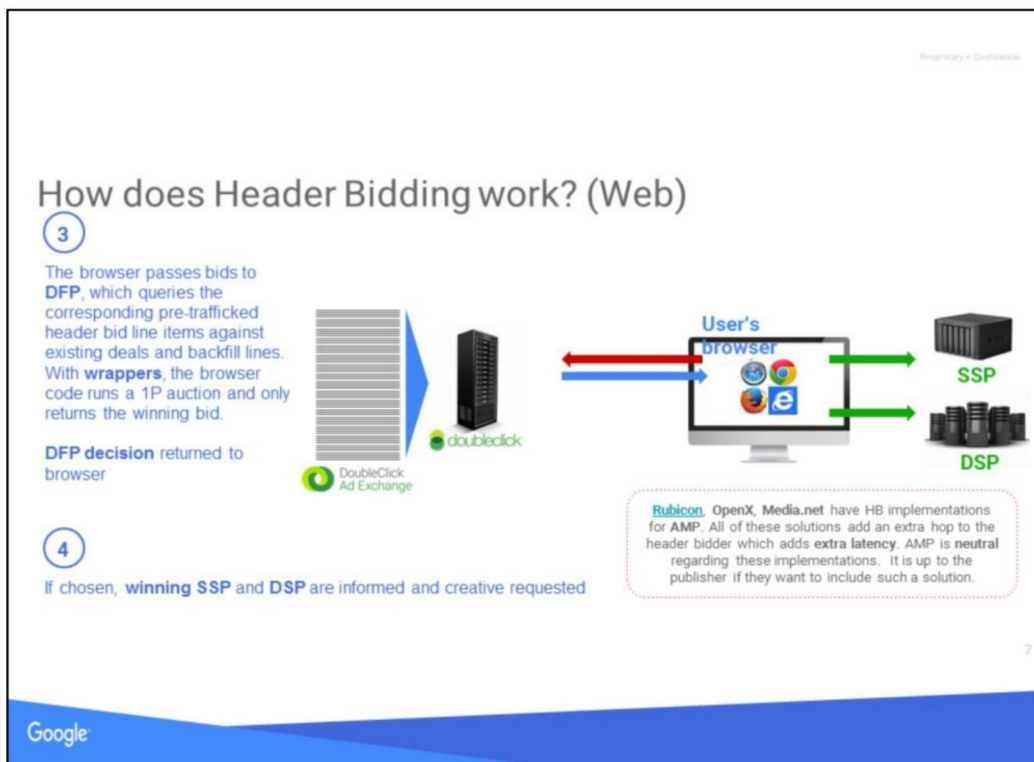
- Literally tens of thousands of line items need to be created to accommodate possible responses from the SSPs, which are called when that vendor is selected in the header.
- Often the vendors encourage trafficking line items at sponsorship or standard priority, to help them compete in the DFP decision logic. However this can confuse DFP's delivery forecasting, prevent AdX from competing in DA, and disrupt the 'temporary CPM' standard lines get in DA.
- Recommend to your publishers to place header bid line items at priority 12, which allows DA to be more effective for them.
- In an App environment, the SSP's software development kit (SDK) is embedded in the app publisher's code to allow the SSP and its SDK to do the majority of the work, instead of the publisher's ad server.
- In some SSP/SDK integrations, the SSP has the potential to supersede the ad server as the primary decision and execution engine for managing advertising. Again, such an option could be attractive to a publisher not interested in utilizing an ad server to manage ad inventory.
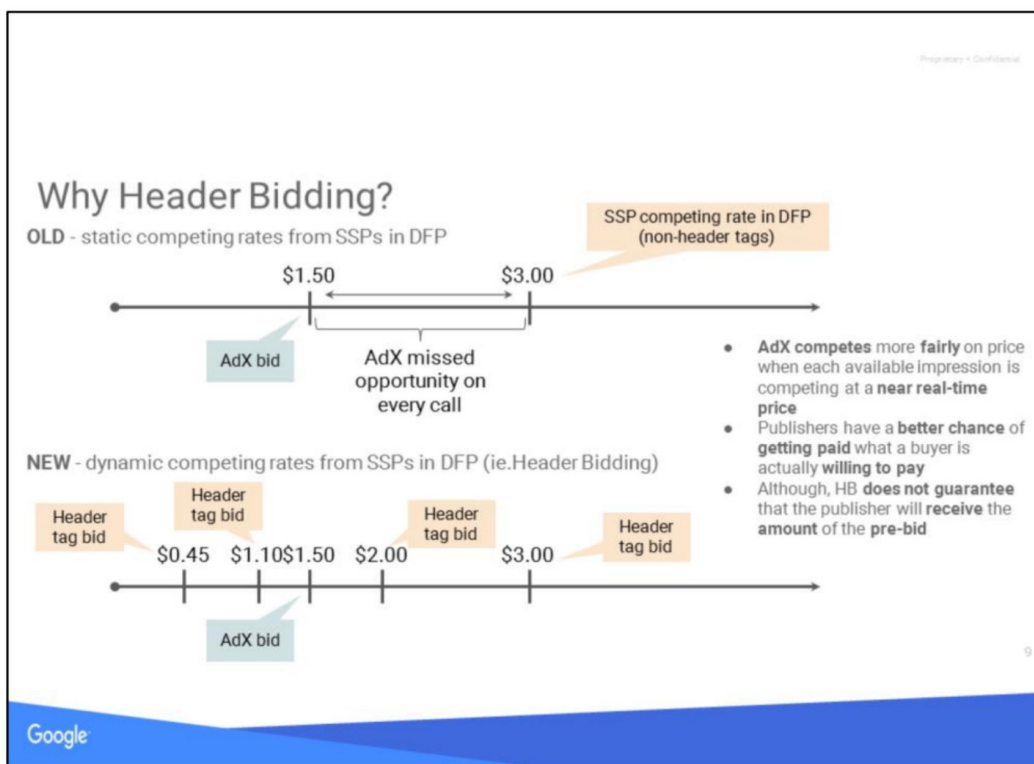
Survey results from IAB interviews show current split in implementations as (not published yet)
Direct – 34%
Container/wrapper – 55%
Server to server – 11%

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In Summary: Pros and Cons of Header Bidding

Pros

- Revenues
  - Publisher has a **better chance** of getting paid what a buyer is actually **willing to pay**
  - The mediation network sees **100%** of the publisher's inventory so can **pick** the highest paying impressions and header bid on them
  - SSPs 'compete' against each other rather than be called in a waterfall
- Vs. Passbacks (waterfall)
  - No network passback needed (since impression is preselected), so ad serving cost is paid once
  - Only one AdX callout needed to compete with all header bidder line items
- Multiple SSPs integration
  - Header bidding makes that a lot easier since you can plug them in rather than have a crazy tiered setup with loads of passbacks

Cons

- **Increased latency** - especially in mobile and video = decreased user experience, viewability, CTR; Timeouts on HB exchanges significantly higher than DRX
- If a demand partner fails it can block a publisher's site from loading
- **Operational complexity** - Thousands of line items need to be created and managed in order to accommodate possible responses from the SSPs
- **Loss of forecasting integrity in your adserver**
- **Data security/leakage** - You are giving the SSP network 100% visibility of your data, even before you get to see it **and the ability for buyers to cookie users even if they don't win the impression**
- **Eventual loss of advertiser trust in RTB auctions** - header bidding can make buyers bid against themselves running 2 auctions for every impression
- **Loss of creative management abilities.**
- **Significant discrepancies** between HB and DFP reports leading to difficult reporting reconciliation **and risk of bid fraud**
- **Troubleshooting complexity** - will require IT assistance beyond the Ad Ops team

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